

breast yellowish brown, a few white spots on the scapulars, and indications on the outer webs of some of the primaries; tail dark brown, and white spots on middle feather; bill greenish at tip, blackish at base.

From the specimens before me, it would appear that this species is very dark when young, and without spots, but becomes lighter and more spotted as it becomes older, and puts on the dress of the mature bird. At all stages of plumage, however, it shows the white over the eyes and at the base of the bill, which caused its first describers to give to it the name of *albifrons*.

VIII.—*Observations on Picicorvus columbianus.*

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I HAVE no hesitation in inviting your attention to a bird that lacks a biographer, though it is one thoroughly known in the dried state. By bringing together the substance of several detached notices that have appeared, and adding, it may be, some further information obtained whilst I was in the West, we may have an account deficient in little, if any thing:

I should not even allude to the well-known intimate affinity of Clarke's Crow with the European Nutcracker, did I not purpose to illustrate by this means a rule of some general applicability. In this case of typical representation of one genus by another, we have an excellent example of the fact that a number of European birds find their nearest American relations in the species of *Western North America*, instead of those of the eastern province. Sometimes there is actual specific identity; again there is only a differentiation of the same species into geographical races, frequently with positive specific distinctness; in birds of the same genus, either the genus itself is confined to the West, or else, while the genus reaches across America, its western species are more particularly like the European than its eastern ones are; and, lastly, certain genera, confined to the West, are strictly *locum tenentia* of European genera. In the following Table examples of each of these kinds and degrees of

relationship are illustrated, more or less perfectly: doubtless others might be added; but these will suffice:—

EUROPEAN.	WESTERN AMERICAN.
<i>Cinclus aquaticus</i> .	<i>Cinclus mexicanus</i> .
<i>Budytes flava</i> .	<i>Budytes flava</i> .
<i>Phyllopneuste</i> , sp. variæ.	<i>Phyllopneuste kennicotti</i> .
<i>Ægithalus</i> , et aff.	<i>Psaltriparus</i> , sp. ; <i>Auriparus</i> .
<i>Lophophanes cristatus</i> .	<i>Lophophanes wollweberi</i> .
<i>Coccothraustes vulgaris</i> .	<i>Hesperiphona vespertina</i> .
<i>Pyrrhula coccinea</i> .	<i>Pyrrhula coccinea</i> , var. <i>cassini</i> *.
<i>Nucifraga caryocatactes</i> .	<i>Picicorvus columbianus</i> .
<i>Cypselus apus</i> ; <i>C. melba</i> .	<i>Panyptila</i> et <i>Nephocœtes</i> .
<i>Falco lanarius</i> , et aff.	<i>Falco polyagrus</i> .
<i>Buteo vulgaris</i> .	<i>Buteo swainsoni</i> (<i>Bryant</i>).
<i>Columba livia</i> ; <i>C. palumbus</i> ; <i>C.</i> <i>oenas</i> .	<i>Columba fasciata</i> ; <i>C. flavirostris</i> .
<i>Ægialites cantiaea</i> .	<i>Ægialitis nivosa</i> (= <i>cantiacus</i> ?).
<i>Anser albifrons</i> .	<i>Anser gambelli</i> (chiefly western).
<i>Somateria stelleri</i> .	<i>Somateria stelleri</i> .
<i>Colymbus arcticus</i> .	<i>Colymbus arcticus</i> , var. <i>pacificus</i> .
<i>Podiceps auritus</i> (<i>auct. nec L.</i> ?).	<i>Podiceps californicus</i> .

But, close as the relations of *Picicorvus* are to *Nucifraga*, we do not indorse the reference of the former to the latter genus, so long as we are to employ generic names at their present slight valuation; and still less can we assent to the recent inclusion of *Gymnokitta* under *Nucifraga*. The bill of *G. cyanocephala* has a peculiar shape, recalling that of *Sturnella*, while the patent nostrils are a rare and remarkable feature among *Corvidæ*. The three genera may very well stand separate, even if contiguous; although doubtless true *Corvinæ*, they are hard upon the obscure boundary-line of the subfamily, where the Crows pass insensibly into the Jays.

Clarke's Crow, first described by Wilson, with the intimation that it inhabited "the shores of the Columbia, and the adjacent country," may be considered one of the characteristic birds of the Rocky-Mountain region of the United States, and to extend thence to the Pacific; but to this general indication of habitat we can now give much more precision. The northernmost record I have seen, is the one Mr. W. H. Dall gives (Trans.

* [Cf. Tristram, *Ibis*, 1871, p. 231.—ED.]

Chicago Acad. 1869, p. 286), mentioning a specimen collected at Sitka by Bischoff. In the other direction we have no Mexican quotations to my knowledge; nor is the species noticed in the Mexican Boundary Survey: but this evidence is only negative; and, from what is known of some corresponding cases, I should not like to affirm that the bird may not pass to the south of the United States, along certain high lines where decrease of latitude is compensated for by increase of altitude. Still our positive evidence goes far towards fixing the limit somewhere about 34° N. We may cite the following as references approximating towards this parallel:—Mimbres to Rio Grande, T. C. Henry (see Baird, B. N. A. 1858, 573); Canton, Burgwyn, N. M., W. W. Anderson (Baird, *op. cit.* 925); 75 miles west of Albuquerque, N. M., C. B. R. Kennerly (Pac. R. R. Rep. x. 1859, iv. 32); Fort Whipple, Ariz., Coues (Pr. A. Sc. Philad. 1866, 55); Fort Tejon, Cal. J. Xantus (see Coop. Cal. Birds, i. 298). To the eastward, Clarke's Crow has been found by Dr. Cooper in Nebraska, near Fort Kearney, which lies in long. $99^{\circ} 6'$ W. (Greenw.), about 3000 feet above sea-level, and by Dr. Suckley on Milk River, in the same State, 200 miles east of the Rocky Mountains. These are probably extreme instances. In mentioning above a westward extent "to the Pacific" I must not be taken literally (for I do not know that the bird ever comes down to the sea-level), but as meaning that it inhabits the mountains west of the main chain—namely, the Sierra Nevadas of California, the Cascade Mountains of Oregon, and, finally, the coast-range of both these countries.

We have thus circumscribed the range of Clarke's Crow with probably a close approximation to accuracy; but it is not the fact that the bird actually inhabits all the area within the salient points indicated. Such is not the case; and this brings us to the matter of its distribution according to altitude. To begin at the top, we find *Picicorvus* as high up the mountains as probably any bird goes, not even excepting *Lagopus leucurus*. "While crossing the Cascade Mountains," says Dr. Newberry (P. R. R. Rep. vi. 1857, pt. iv. p. 83), "at the line of perpetual snow, 7000 feet above the sea-level, I have seen this bird, with Lewis's Woodpecker (*Melanerpes torquatus*), flying over the snow-

covered peaks 3000 feet above us." The few peaks that exceed 10,000 feet are not so much higher that we may not reasonably suppose them to be visited (sometimes, at any rate) by Clarke's Crow, in which we most certainly recognize one of the most thoroughly alpine of our birds. The author just quoted has, in the same place, indicated, on the other hand, the usual lowest descent of the species, which never, where he saw it, descended "to a lower altitude than about 4000 feet." It does, however, come somewhat further down: the Fort-Kearney citation, just given, is an instance of this; and others could be mentioned: thus Fort Colville, near where Mr. Lord found the bird breeding, is only 2800 feet above sea-level, according to official reports. Probably this is somewhat exceptional, and at any rate must be taken in connexion with the high latitude of the locality ($48^{\circ} 41' N.$). On the whole, I should not be inclined to place the usual range, in an average latitude, lower than 4000 feet, as given by Dr. Newberry. In a word, Clarke's Crow is emphatically a bird of the coniferous zone of vegetation; its range is to be mapped out rather with reference to this than to either altitude or latitude; for these are complementary to each other, zoologically speaking, and within its own faunal area it has occurred in so many different localities that we may fairly consider its range coextensive with pine-forests.

Like others of its family, of hardy nature, and subsisting upon substances procurable at all seasons, Clarke's Crow is not a migrant in the ordinary sense of the word; that is to say, it does not pass regularly north and south at stated intervals: collectively, indeed, the species may be termed stationary; but it by no means follows that all the individuals that compose it are localized. On the contrary, it is a restless bird, scurrying about the mountains, appearing and disappearing irregularly, and sometimes unaccountably, few special localities probably, if any, seeing it the year round. The nearest approach to regularity of movement that we can make out seems to be its flying *down* the mountains at the approach of rigorous weather, in lieu of retreating southward, and its returning in spring to elevated places. This may be pretty safely asserted for latitudes from 45° southward, although, as we have seen, it breeds very low

down at 48°. Thus, at Fort Whipple, Arizona (near 35° 30', and from 4000 to 5000 feet high), I never saw one in summer, though it was very abundant at irregular intervals from October till March ; and I have no doubt that it went up the neighbouring San-Francisco mountains, to twice the elevation or more, to breed there, along with the *Gymnokitta*. In all these points, it will be seen that Clarke's Crow is not peculiar, but recalls many parallel cases.

From what has gone before, what I shall have to say of the bird's food will be anticipated. Pine-seeds are not its exclusive diet, to be sure, all the family being too nearly omnivorous for this ; but these fruits form by far the greater part of its nourishment. It also eats cedar-berries (*Juniperus*), and the acorns of the scrubby oaks that grow in the glades of the lower mountain-valleys that the bird visits. Of the number of birds that feed from pine-cones, only one, the Crossbill, has a special apparatus for shelling out the seeds ; and it is curious to observe how differently the others go about it. The Long-crested Jay (*Cyanura macrolopha*), for example, will hold a cone under its feet, like a Hawk a small bird, and dig out the seeds ; or it will carry a cone in its bill to stick in a crotch, and then hammer at it like a Nuthatch. I have never seen Clarke's Crow go to work in either of these ways : it pries directly into the scales of the strobile with its long conico-cuneate bill, and gouges out the seeds, meanwhile often hanging to the bunch of cones head downwards, like a Thistle-bird (*Chrysomitris tristis*) swinging under the globular ament of a *Platanus*. How much animal diet the bird approves of, I can hardly say ; but it certainly does eat insects. Dr. Cooper has noticed the birds "pecking at dead bark to obtain insects, and flying short distances after them, like Woodpeckers" (*op. cit.* 290) ; and I have often witnessed the same thing. It does not seem to come down to the ground so often as other birds of its tribe ; and what it gets there is uncertain ; perhaps, however, it then gathers other kinds of seeds and insects for variety, and no doubt picks up gravel to help to grind the tough pine-seeds it harvests above. We have another evidence of its very slightly terrestrial habits in the length, curvature, and sharpness of its

claws (which, however, are not "raptorial" at all, as Wilson hastily surmised), in which features I see an adaptation to clinging on pine-cones, that would speedily be interfered with if the bird spent much of its time on the ground. I may add here that, when on the ground, the bird does not hop like a Jay, but walks erect, firmly and easily, like a Crow—a fact that may have some weight in classification.

The first bird of this kind I ever saw alive was brought to me at Fort Whipple, in winter, by an old hunter, who had winged it with a pistol-bullet as it came about his cabin forgetting its natural shyness in the extreme of hunger. Notwithstanding that one pinion had been shot away, it appeared "chipper and peart," took kindly to bread and meat, and soon became quite tame and amusing. Contrary to what I should have expected, it was silent (except when handled, which it did not like), appeared to be of a reflective and inquiring turn of mind, and, when not meditating on the back of a chair, used to go about examining the furniture with grave curiosity, yet evidently bent upon preserving a *nil admirari* deportment. I came to like my strange visitor—perhaps the first one ever entertained in a civilized way—when it died, doubtless from the effects of its wound, after a brief illness marked by complete anorexia and rapid marasmus.

How it may be during the breeding-season I do not know; but at other times Clarke's Crow is decidedly gregarious; you will be more likely to see fifty together than one alone; and sometimes the vagabond troops are still larger. Likewise it is one of the noisiest of birds; a flock feeding or amusing themselves in the top of a pine tree will make more noise than as many Jays, which is enough to say on this score. The notes cannot be described; in fact they are not "notes" at all, the voice being a strident discord of prolonged screaming that must be heard to be duly appreciated. Sometimes, however, the birds are as still as mice—for example, when they are not assured their position is perfectly safe. The approach of a suspicious character, as the inevitable naturalist, or some other equally obnoxious party, is very apt to silence the whole flock, and send them trooping off together, unless, indeed, they

are frightened enough to disperse without thinking of each other. This shyness is a marked trait: hardly any of our birds (certainly none of the smaller kinds) are more difficult to secure under ordinary circumstances. I would as soon try to steal upon a Common Crow that had observed me as attempt the same with one of Clarke's kind; and moreover they keep on the tops of trees so high that small shot may fail to bring them down. It is best, after a flock is once alarmed and dispersed, to keep perfectly still for a while, and then skulk cautiously along, with a sharp eye for the tree-tops, where most likely some that stayed behind, hoping for concealment in the thick foliage, will be noticed hopping about after their first alarm. Occasionally a different and easier way is open; for these Crows, like the Long-crested and other Jays, sometimes pitch, *en masse*, into a thick tree, and sit motionless, however nearly approached. Under these circumstances several may be procured in rapid succession before the flock starts off again. This is something like what has been observed with certain Grouse and Ptarmigan.

Clarke's Crow has two different modes of flight—one for long stretches, the other for short reaches. When on a journey, it flies with some rapidity, in a perfectly straight steady course, with regular vigorous wing-beats, much like Maximilian's Jay under the same circumstances. Its other flight, as when it swings itself from tree to tree, is swifter and undulating; the wings are alternately spread and nearly closed, and the bird then rises and falls like a Woodpecker. It has also other traits, difficult to specify, but readily observable, that strongly remind one of a Woodpecker; so that whether Bonaparte made his genus *Picicorvus* from *Picus* or *Pica*, in neither case was he far wrong.

I know nothing of the mode of propagation of this bird from personal observation; and until very recently its nest and eggs had not been brought to the notice of naturalists. But the desired information in this matter has been happily supplied by Mr. Lord, who found the birds breeding, and published the first, and, so far as I know, the only account that has appeared. I have not his notice at hand for reference;

but Cooper (*l. c.*) puts the case in this shape:—"Near Fort Colville, Washington Territory, Mr. J. K. Lord found this species arriving in May in immense flocks, making a tremendous chattering for about a week, and then pairing off. A nest he saw was on the top of a pine tree 200 feet high, which was cut down on the boundary. It was composed of fir twigs, bark, leaves of pine, and fine root-fibres, with some moss and gray lichen—very large and shallow. The eggs were about four, of a light bluish-green."

In conclusion, I would say that I have collected, for convenience of future reference, a number of quotations, which, however, I would recommend you to print, if at all, in a foot-note. Synonymy does not make "juicy" reading; and the dryness of what you have already had renders further exsiccation inexpedient!—

CORVUS COLUMBIANUS, Wils. A. O. iii. 1811, p. 29, pl. 20, f. 2 (descr. orig.); Bp. Obs. Wils. 1824, no. 38, and Syn. 1828, 57; Jamieson's ed. Wils. i. 1831, 249; Nutt. Man. Orn. i. 1832, 218; Brewer's ed. Wils. 1840, 209, f. 94; Blyth, in Cuv. R. A. Am. ed. 1849, 204.

Nucifraga columbiana, Aud. O. B. iv. 1838, 459, pl. 362, and Syn. 1839, 156, and B. A. iv. 1842, 127, pl. 235; Bp. C. & G. L. 1838, p. 28; Nutt. Man. Orn. 1840, i. 251.

Nucifraga (Picicorvus) columbiana, Gray, Hand-L. pt. ii. p. 9.

Picicorvus columbianus, Bp. C. A. 1850, i. 384; Newberry, P. R. R. Rep. vi. 1857, pt. iv. 83; Baird, *ibid.* ix. 1858, p. 573 (R. Mts. to Pac.; E. to Ft. Kearney, p. 925, Canton Burgwyn, N. M. & Ft. Tejon, Cal.); Kennerly, *ibid.* x. pt. iv. 32 (75 m. W. Albuquerque, N.W.); Coop. & Suckl. *ibid.* xii. pt. ii. 212 (Wash. & Oreg. to Nebraska); Hayden, Geol. & N. H. of Up. Missouri, Philad. 4to, 1862, p. 171 (Ft. Laramie); Coues, Pr. A. N. S. Phil. 1866, 55 (Fort Whipple, Ariz.); Lord, Nat. in Vancouver's Island, ii. 1860, p. (breeding near Ft. Colville, W. T.); Dall & Bannister, Trans. Chicago Acad. i. 1869, 286 (Sitka); Coop. Cal. Orn. i. 1811, 289, with 3 figs.

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